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EXAMINER

RENNER, CRAIG A

ART UNIT	PAPER NUMBER
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2627

MAIL DATE	DELIVERY MODE
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06/29/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/826,022

Applicant(s)

HONG ET AL.

Examiner

Craig A. Renner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 16 April 2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of "Species II corresponding to FIG. 4," upon which "claims 1-20" are said to be "readable," in the reply filed on 07 June 2007 is acknowledged. Accordingly, no claims are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to one or more non-elected inventions/species, there being no allowable generic or linking claim.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 16 April 2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

Oath/Declaration

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c). Note, for instance, the citizenship of TakKoon Ooi.

Drawings

4. FIGS. 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 7 and 13-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. In lines 8-9 of claim 7, the "overall form factor of a Type I compact flash card" is indefinite as the dimensions of a Type I compact flash card may be subject to change and therefore the meets and bounds of the claim cannot be ascertained.

b. In line 5 of claim 13, "the printed circuit board assembly" is indefinite because it lacks clear and/or positive antecedent basis.

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c. In line 2 of claim 15, it is indefinite as to whether “the gap” refers to that set forth in line 4 of independent claim 13, or that set forth in line 2 of claim 15.

d. Claims 14 and 16-20 inherit the indefiniteness associated with their respective base claims and stand rejected as well.

Double Patenting

7. Claims 8-12 are objected to under 37 CFR 1.75 as being substantial duplicates of claims 2-6, respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Specifically, claims 8-12 recite the same limitations and depend from the same claims as claims 2-6, respectively.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 2, 4, 7, 8, 10, 13, 14, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Schmitz (US 5,235,482).

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With respect to claims 1, 2, 4, 8, and 10, Schmitz (US 5,235,482) teaches an integrated composite base plate and printed circuit board structure for a data storage device comprising a base plate (102); a printed circuit board (106) attached to the base plate and spaced therefrom by a gap (as shown in FIG. 1, for instance); and a first adhesive layer (104) between the printed circuit board and the base plate substantially filling the gap (as shown in FIG. 1, for instance) and bonding the circuit board and base plate together to form a stiff composite structure for supporting a data storage disc (108) on a drive motor (includes 1604, for instance) mounted on the base plate (as shown in FIG. 1, for instance) [as per claim 1]; wherein the base plate has an aperture (314, for instance) receiving therethrough at least one component mounted on the printed circuit board (line 68 in column 6 through line 3 in column 7, for instance) [as per claims 2 and 8]; and wherein the printed circuit board has a connector (140) fastened thereto and the first adhesive layer bonds the connector to the base plate (as shown on the front page, for instance) [as per claims 4 and 10].

With respect to claim 7, Schmitz (US 5,235,482) teaches an integrated composite base plate and printed circuit board structure comprising a base plate (102); a printed circuit board (106) attached to the base plate and spaced therefrom by a gap (as shown in FIG. 1, for instance); and a first adhesive layer (104) between the printed circuit board and the base plate substantially filling the gap (as shown in FIG. 1, for instance) and bonding the circuit board and base plate together to form a stiff composite structure (as shown in FIG. 1, for instance) for supporting a data storage disc (108) on a drive motor (includes 1604, for instance) mounted on the base plate, and capable of

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being used with a disc drive having an overall form factor of a Type I compact flash card. With respect to the intended use limitation(s) appearing in claim 7, note that a recitation with respect to the manner in which a claimed apparatus (i.e., "structure") is intended to be employed (i.e., "for a disc drive ... [that] has an overall form factor of a Type I compact flash card", for instance) does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations, *Ex parte Masham*, 2 USPQ2d 1647 (PTO BPAI 1987).

With respect to claims 13, 14, and 16, Schmitz (US 5,235,482) teaches a structure having a base plate (102) for supporting a disc drive motor (includes 1604, for instance) and an actuator (116) in a disc drive (100) comprising a printed circuit board (106); and a bonding means (includes 104, for instance, in at least an equivalent structural sense) filling a gap between the base plate and the printed circuit board (as shown in FIG. 1, for instance) for fastening the printed circuit board assembly to the base plate and forming a stiff support structure (as shown in FIG. 1, for instance) [as per claim 13]; wherein the bonding means is a layer of adhesive between the base plate and the printed circuit board (as shown in FIG. 1, for instance) [as per claim 14]; and wherein the base plate has an aperture (314, for instance) therethrough and the printed circuit board has at least one component projecting into the aperture (line 68 in column 6 through line 3 in column 7, for instance) [as per claim 16].

10. Claims 1, 2, 7, 8, 13, 14, 16, 17, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Shirotori (US 4,818,907).

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With respect to claims 1, 2 and 8, Shirotori (US 4,818,907) teaches an integrated composite base plate and printed circuit board structure for a data storage device comprising a base plate (1); a printed circuit board (19) attached to the base plate and spaced therefrom by a gap (as shown in FIG. 5, for instance); and a first adhesive layer (includes 26, for instance) between the printed circuit board and the base plate substantially filling the gap (as shown in FIG. 5, for instance, i.e., in the area adjacent element 6, for instance, in as broad as the term "substantially" may be construed) and bonding the circuit board and base plate together to form a stiff composite structure (as shown in FIG. 5, for instance) for supporting a data storage disc (12) on a drive motor (includes 16, 17, 20, and 21, for instance) mounted on the base plate [as per claim 1]; wherein the base plate has an aperture (1a, for instance) receiving therethrough at least one component (5) mounted on the printed circuit board [as per claims 2 and 8].

With respect to claim 7, Shirotori (US 4,818,907) teaches an integrated composite base plate and printed circuit board structure comprising a base plate (1); a printed circuit board (19) attached to the base plate and spaced therefrom by a gap (as shown in FIG. 5, for instance); and a first adhesive layer (includes 26, for instance) between the printed circuit board and the base plate substantially filling the gap (as shown in FIG. 5, for instance, i.e., in the area adjacent element 6, for instance, in as broad as the term "substantially" may be construed) and bonding the circuit board and base plate together to form a stiff composite structure (as shown in FIG. 5, for instance) for supporting a data storage disc (12) on a drive motor (includes 16, 17, 20, and 21, for instance) mounted on the base plate, and capable of being used with a disc drive

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having an overall form factor of a Type I compact flash card. With respect to the intended use limitation(s) appearing in claim 7, note that a recitation with respect to the manner in which a claimed apparatus (i.e., "structure") is intended to be employed (i.e., "for a disc drive ... [that] has an overall form factor of a Type I compact flash card", for instance) does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. See *Ex parte Masham*, supra.

With respect to claims 13, 14, 16, 17, 19, and 20, Shirotori (US 4,818,907) teaches a structure having a base plate (1) comprising a printed circuit board (19); and a bonding means (includes 26, for instance, in at least an equivalent structural sense) filling a gap (adjacent element 6, for instance) between the base plate and the printed circuit board (as shown in FIG. 5, for instance) for fastening the printed circuit board assembly to the base plate and forming a stiff support structure (as shown in FIG. 5, for instance) [as per claim 13]; wherein the bonding means is a layer of adhesive (line 39 in column 1, for instance) between the base plate and the printed circuit board [as per claim 14]; wherein the base plate has an aperture (1a, for instance) therethrough and the printed circuit board has at least one component (5) projecting into the aperture [as per claim 16]; wherein the adhesive is an epoxy adhesive (line 39 in column 1, for instance) [as per claim 17]; wherein the gap is substantially planar (as shown in FIG. 5, for instance, in as broad as the term "substantially" may be construed) and the bonding means is a layer of epoxy (line 39 in column 1, for instance) that covers a surface of the printed circuit board and surrounds components (5 and 6) mounted on the printed circuit board (as shown in FIG. 5, for instance) [as per claim 19]; and wherein the base plate

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has an aperture (1a, for instance) therethrough receiving one (5) of the components therein [as per claim 20]. With respect to the intended use limitation(s) appearing in claim 13, note that a recitation with respect to the manner in which a claimed apparatus (i.e., "structure") is intended to be employed (i.e., "for supporting a disc drive motor and an actuator in a disc drive", for instance) does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. See *Ex parte Masham*, supra.

11. Claims 1, 7, and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Yagi et al. (US 5,654,847).

With respect to claim 1, Yagi et al. (US 5,654,847) teach an integrated composite base plate and printed circuit board structure for a data storage device comprising a base plate (11); a printed circuit board (15a) attached to the base plate and spaced therefrom by a gap; and a first adhesive layer (lines 47-50 in column 9, for instance) between the printed circuit board and the base plate substantially filling the gap and bonding the circuit board and base plate together to form a stiff composite structure for supporting a data storage disc (28) on a drive motor (2) mounted on the base plate [as per claim 1].

With respect to claim 7, Yagi et al. (US 5,654,847) teach an integrated composite base plate and printed circuit board structure comprising a base plate (11); a printed circuit board (15a) attached to the base plate and spaced therefrom by a gap; and a first adhesive layer (lines 47-50 in column 9, for instance) between the printed circuit board

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and the base plate substantially filling the gap and bonding the circuit board and base plate together to form a stiff composite structure for supporting a data storage disc (28) on a drive motor (2) mounted on the base plate, and capable of being used with a disc drive having an overall form factor of a Type I compact flash card (lines 55-57 in column 5, for instance, i.e., especially since the base plate has a matching footprint). With respect to the intended use limitation(s) appearing in claim 7, note that a recitation with respect to the manner in which a claimed apparatus (i.e., "structure") is intended to be employed (i.e., "for a disc drive ... [that] has an overall form factor of a Type I compact flash card", for instance) does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. See *Ex parte Masham*, supra.

With respect to claims 13-15, Yagi et al. (US 5,654,847) teach a structure having a base plate (11) for supporting a disc drive motor (2) and an actuator (3) in a disc drive comprising a printed circuit board (15a); and a bonding means (lines 47-50 in column 9, for instance, in at least an equivalent structural sense) filling a gap between the base plate and the printed circuit board for fastening the printed circuit board assembly to the base plate and forming a stiff support structure [as per claim 13]; wherein the bonding means is a layer of adhesive (lines 47-50 in column 9, for instance) between the base plate and the printed circuit board [as per claim 14]; wherein the structure further comprises a printed circuit board shield (51) spaced from the printed circuit board by a gap and another layer of adhesive (58, for instance) filling the gap bonding the shield to the printed circuit board [as per claim 15].

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmitz (US 5,235,482).

Schmitz (US 5,235,482) teaches the structure as detailed in paragraph 9, supra, further wherein the gap is substantially planar (as shown in FIG. 1, for instance) and the bonding means is a layer of adhesive (as shown in FIG. 1, for instance) that covers a surface of the printed circuit board (as shown on the cover, for instance) and surrounds components mounted on the printed circuit board (lines 46-51 in column 7, for instance); and wherein the base plate has an aperture (314, for instance) therethrough receiving one of the components therein (line 68 in column 6 through line 3 in column 7, for instance). Schmitz (US 5,235,482), however, remains silent as to the adhesive material being "epoxy."

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Official notice is taken of the fact that epoxy is a notoriously old and well known adhesive material in the art. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the adhesive material of Schmitz (US 5,235,482) be epoxy. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the adhesive material of Schmitz (US 5,235,482) be epoxy since such is a notoriously old and well known adhesive material in the art, and since selecting a known material on the basis of its suitability for the intended use is within the level of ordinary skill in the art, *In re Leshin*, 125 USPQ 416 (CCPA 1960).

15. Claims 3, 5, 6, 9, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmitz (US 5,235,482) in view of Ojeda et al. (US 6,958,884).

Schmitz (US 5,235,482) teaches the structure as detailed in paragraph 9, *supra*, further wherein an overall thickness of the structure is less than 3.3 mm (lines 28-29 and 52-57 in column 7 and lines 61-63 in column 8, for instance, i.e., $0.05" + 0.010" + 0.062" = 0.122" \approx 3.1 \text{ mm} < 3.3 \text{ mm}$). Schmitz (US 5,235,482), however, remain silent as to the structure further comprising a "printed circuit board shield fastened to an underside surface of the printed circuit board by a second adhesive layer between the printed circuit board and the shield" and as to the base plate thickness being "between 0.2 mm and 0.3 mm."

Ojeda et al. (US 6,958,884) teaches a structure further comprising a printed circuit board shield (includes 202, for instance, lines 13-14 in column 3, for instance)

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fastened to an underside surface (i.e., dependent upon viewer perspective) of a printed circuit board (4) by an adhesive layer (204) between the printed circuit board and the shield in the same field of endeavor for the purpose of protecting the printed circuit board. Official notice is taken of the fact that it is notoriously old and well known in the data storage device art to modify the parameters of data storage device components during the course of routine optimization/experimentation. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the structure of Schmitz (US 5,235,482) further comprise a printed circuit board shield fastened to an underside surface of the printed circuit board by a second adhesive layer between the printed circuit board and the shield as taught by Ojeda et al. (US 6,958,884) and to have had the base plate thickness of Schmitz (US 5,235,482) be between 0.2 mm and 0.3 mm. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the structure of Schmitz (US 5,235,482) further comprise a printed circuit board shield fastened to an underside surface of the printed circuit board by a second adhesive layer between the printed circuit board and the shield as taught by Ojeda et al. (US 6,958,884) since such protects the printed circuit board.

One of ordinary skill in the art would have been motivated to have had the base plate thickness of Schmitz (US 5,235,482) be between 0.2 mm and 0.3 mm since such a range, absent any criticality (i.e., unobvious and/or unexpected result(s)), is generally achievable through routine optimization/experimentation, and since discovering the optimum or workable ranges, where the general conditions of a claim are disclosed in

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the prior art, involves only routine skill in the art, *In re Aller*, 105 USPQ 233 (CCPA 1955). Moreover, in the absence of any criticality (i.e., unobvious and/or unexpected result(s)), the parameter set forth above would have been obvious to a person having ordinary skill in the art at the time the invention was made, *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

16. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yagi et al. (US 5,654,847).

Yagi et al. (US 5,654,847) teach the structure as detailed in paragraph 11, *supra*. Yagi et al. (US 5,654,847), however, remain silent as to the adhesive material being "epoxy."

Official notice is taken of the fact that epoxy is a notoriously old and well known adhesive material in the art. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the adhesive material of Yagi et al. (US 5,654,847) be epoxy. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the adhesive material of Yagi et al. (US 5,654,847) be epoxy since such is a notoriously old and well known adhesive material in the art, and since selecting a known material on the basis of its suitability for the intended use is within the level of ordinary skill in the art. See *In re Leshin*, *supra*.

Pertinent Prior Art

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Elsaesser et al. (US 4,779,165), which teach a structure comprising an adhesive layer (184) between a base plate (includes 183, for instance) and a printed circuit board (138) (lines 39-40 in column 10, for instance); Schmitz (US 5,034,837), which teaches a structure comprising an adhesive layer (104) between a base plate (102) and a printed circuit board (106); Takagi et al. (US 5,508,860), which teach a structure comprising an adhesive layer (line 66 in column 10 through line 1 in column 11, for instance) between a base plate (4) and a printed circuit board (3); Koizumi et al. (US 5,650,895), which teaches a structure comprising an adhesive layer (lines 30-32 in column 6, for instance) between a printed circuit board shield (21d) and a base plate (11); Andress et al. (US 5,757,580), which teach a structure comprising an adhesive layer (130) between a base plate (12) and a printed circuit board (104) (as shown in Fig. 6, for instance), and a structure comprising an adhesive layer (130) between a printed circuit board shield (102) and a printed circuit board (104) (as shown in Fig. 5, for instance); Codilian (US 6,697,217), which teaches a structure comprising an adhesive layer (32) between a base plate (22) and a printed circuit board (28) (as shown in FIG. 10B, for instance); and Ojeda et al. (US 6,954,329), which teach a structure comprising an adhesive layer (204) between a base plate (2) and a printed circuit board (4).


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Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (571) 272-7580. The examiner can normally be reached on Tuesday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Craig A. Renner
Primary Examiner
Art Unit 2627

CAR